



November 9, 2018

Case No. 18-NOI-01

-Via Email & FedEx-

Chief Clerk's Office
Illinois Commerce Commission
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RE: Reply Comments of Greenlots in Response to EV NOI

Greenlots submits these reply comments as solicited by the Illinois Commerce Commission's ("the Commission") September 24, 2018 Notice of Inquiry ("the NOI") requesting comments in regards to electric vehicles ("EV") in Illinois, and initial stakeholder comments previously filed in this inquiry.

Greenlots is a leading provider of EV charging software and services committed to accelerating transportation electrification in Illinois. The Greenlots network supports a significant percentage of the DC fast charging infrastructure in North America, and an increasing percentage of the Level 2 infrastructure supporting fleet, retail, workplace, and residential charging. Greenlots' smart charging solutions are built around an open standards-based focus on future-proofing while helping site hosts, utilities, and grid operators manage dynamic EV charging loads and respond to local and system conditions.

Greenlots applauds the Commission for initiating this inquiry and recognizing the significant challenges and opportunities posed by transportation electrification in Illinois. As many stakeholders recognized in their opening comments, transportation electrification stands to bring a host of benefits to Illinois and society at large. These include economic development and cost savings, as well as environmental and energy security benefits, among others. Additionally, transportation electrification represents likely the single greatest opportunity to increase the utilization and efficiency of the electric grid to the benefit of all ratepayers. These benefits will not happen automatically however, and will require thoughtful and deliberate planning and programs to realize.

The Commission's focus on transportation electrification therefore is both timely, needed and appropriate. Before diving into the key issues and considerations before the Commission, we feel compelled to address several fringe and inaccurate assertions raised by a select few commenters which may appear to some as being threshold matters. Frankly, we were conflicted on whether to address these comments directly, as the arguments lack foundation.

Addressing Old Arguments

Several initial comments asserted that transportation electrification only benefits rich people who drive EVs. To dispel this, one only needs to look at the electric vehicle cost-benefit analysis specific to Illinois that was performed by MJ Bradley & Associates.¹ This report, cited by many stakeholders in their initial comments, clearly lays out and places values on two other key categories of benefits other than those that directly accrue to drivers, namely utility customer savings and societal value from CO2 reductions. Many other reports and studies lay out the significant array and categories of benefits from transportation electrification also. It is important to note that there are many other benefits also that are not accounted for in this report, including those related to energy independence, energy security, and economic development derived from increased transportation electrification.

Unfortunately these comments also fail to recognize that it is generally lower income communities suffering disproportionately from the environmental and human health effects of fossil fuel emissions from transportation, and therefore have the most to gain from electrification. Additionally, state and especially utility involvement can further enhance and ensure equitable access to electric transportation.

Finally on this point, while EVs currently are more expensive up front than their fossil fuel counterparts, this will not be the case for long, and there already are some exceptions to this in the second-hand market, and already many EV drivers have experience a lower total cost of ownership versus fossil fuel vehicles. Bloomberg New Energy Finance estimates that by 2024 certain new EVs will reach cost parity with their fossil fuel counterparts, and Greenlots expects a more aggressive timeframe.² To prepare for this, and to maximize the societal benefits and those that accrue to all utility customers, Illinois cannot afford inaction.

Some comments suggest that because the significant majority of charging currently happens at home, if any action is to be taken, it should be limited to rate design related to charging in this specific context. While this may be the case for many early adopters with single family homes, a dedicated garage and access to home charging, this will not be the case for the broader market. This is not a situation where looking at the present is a good indicator of what we will see in the future. As discussed later, access to charging outside of this specific context will be key in both accelerating transportation electrification, and in providing equitable access to it.

Some comments further suggest that utility involvement in charging infrastructure will inhibit private investment and be detrimental to the expansion of the EV charging market. As a private market provider of this technology and these services, Greenlots strongly disagrees with this conclusion and this characterization of the market as a whole. Additionally, we submit that the Commission and stakeholders should look to actual participants in this market for relevant market perspectives. It is important to note that while there may be some differences in opinion

¹ Available here: <https://mjbradley.com/sites/default/files/IL%20PEV%20CB%20Analysis%20FINAL%2026sep17.pdf>

² <https://www.bloomberg.com/news/articles/2018-03-22/electric-cars-may-be-cheaper-than-gas-guzzlers-in-seven-years>

in how utilities should participate in the market, not a single market participant or provider of these products and services submitted comments suggesting that utilities do not have an important role. The question is not one of if utilities should be involved, it is a question of how, and like most commenters, we see a critical and central role for utilities in transportation electrification.

State of the Market

To further illustrate the benefit of utility investment and engagement in growing and accelerating the market, and to help inform what action Illinois and its utilities should take, it is helpful to dive a bit deeper into the state of the current market for EVs and EV charging. Indeed, one of the most significant and enduring barriers to increased EV adoption is the lack of charging infrastructure, particularly public charging. This is primarily on account of the fact that while there is competition between a relatively small field of sellers of EV charging products and services to motivated investors/site hosts, there is not a competitive market for offering these services directly to drivers.

For example, in the residential context, an EV owner who needs a home charger will have no difficulty finding plenty of electric vehicle supply equipment (“EVSE”) sellers and EVSE offerings to install in his or her garage. The same goes for a business that is motivated to purchase, own and operate EVSE on their premises as a value-added service or amenity to their customers and/or employees, perhaps to increase employee satisfaction, bolster their social/environmental responsibility, attract customers or otherwise differentiate themselves in the marketplace. Unfortunately however, the existence of a competitive market largely ends here.

Outside of these specific use cases there are many forms of public charging – chargers for which there are not motivated investors/buyers. This includes Level 2 chargers at public parking spaces or parking garages of certain multi-unit dwellings, or DC fast chargers in metro areas or key transportation corridors to facilitate everyday and longer-range travel. This is EVSE deployed purely to provide charging services – chargers for provision of a charging service not in the context of offering an amenity or an additional value-added service.

For this second critical category, unfortunately a sustainable, competitive market is aspirational, and is unlikely to arise prior to the adoption of a critical mass of electric vehicles. This is primarily on account of a lack of a business model for the ownership and operation of public charging stations based on sustainable revenues from charging activities, and this has thus far resulted in a fundamentally inadequate amount of private investment in such charging infrastructure. Importantly, this is the specific category that drivers and studies consistently cite as being the primary barrier to EV adoption.

Role of the utility

This current particular market state referenced above, which can only be described as a market failure, is a classic situation warranting public investment and the involvement of regulated monopolies. Indeed, at such a stage in the market, ownership and operation of charging infrastructure – including charging stations – is an appropriate and in many respects necessary role for the utility in breaking through these barriers, accelerating the market across most market segments, creating increased competition and attracting private investment. Indeed, a strong and central utility role, which includes regulated utility investment in charging infrastructure, was a common theme across essentially all stakeholder comments with the exception of the fringe few vested in the status quo with transparent arguments debunked above.

A deep and flexible utility role is essential to leverage its full involvement, assets and capabilities to accelerate transportation electrification and best position ratepayers to realize the full array of benefits this technology transformation can bring.³ Whether this be the ownership of charging infrastructure or the development of rates that send better price signals to manage EV loads in ways that best support the needs of the grid, or minimizing or avoiding unnecessary grid investments by knowing where, when and how EV loads are interacting with distribution infrastructure; these and many other benefits will not be fully realized without deep and active participation by the utility.

Moreover, the nature of EVSE assets, being a natural extension of existing utility infrastructure, with similar hardware, features and capabilities as for example smart meters, fit very well within the core competencies and capabilities of utilities. This is particularly true with respect to ownership and maintenance of widely-dispersed, long-lived electricity-dispensing and metering equipment, and ensuring the safety and reliability of those assets. Having existing qualified field personnel allows for this, while purchasing economics to lower costs and having relevant system, business process, software, and customer service expertise and capabilities further aligns naturally with the demands of successful EVSE deployment. Utilities are also well positioned to support the hiring and training of field support personnel and other key roles necessary to execute the electrification of transportation.

Well designed utility programs can also by and large extend the same type of reliability to EV charging infrastructure that ratepayers expect for all other utility services. A badly undervalued aspect of the EV charging equipment and services market is the cost associated with keeping equipment up and running and repairing or replacing it quickly if and when it encounters an issue. While early adopters of EVs may tolerate the often-poor reliability associated with much of the charging infrastructure that is deployed today, the broader market likely will not. Moreover, as the demands on EVSE deployments increase with more EV drivers on the road, many of the factors that lead to poor reliability may compound. This therefore represents a key barrier to widespread transportation electrification. To achieve the level of reliability drivers currently

³ I.d. at p. 9.

experience and expect from traditional fueling stations, much more needs to be done. Utility program investment offers opportunity for electric vehicle service providers and contractors to benefit from a more accurately valued maintenance service that will not only improve reliability of EVSE within the utility program, but will likely extend beyond the bounds of the program to benefit EV charging equipment and service providers in the market as a whole.

Without an integrated, holistic approach developed by the utility, the ability of the EV consumer to engage suffers, with the EV charging space fragmented by geography, market segment, business structure and sales priorities. The end consumer (the driver) can become frustrated as a result of this fragmented and disparate approach. However, the utility stands in a unique and powerful position to help resolve these issues with a more comprehensive, structured and rational approach that overcomes barriers to market growth and ensures and maximizes benefits to all ratepayers.⁴

Without prescribing a specific role for the utility within the broad context of market accelerator, Greenlots believes that providing flexibility and appropriate incentives for the utility, including recovery in rates of prudently incurred costs, to self-select the role(s) that best fit(s) its distribution system, customers, and future planning is essential to helping motivate the utility to be excited about its involvement in accelerating the market. A rural service area faces different challenges than does an urban one, and utilities should be afforded the ability to explore the different solutions and program designs that may best address the differing service area factors.

In summary, it is clear that the deeper the utility role, the greater the benefit to ratepayers, EV drivers, auto manufacturers, and indeed EV charging companies. Ratepayers benefit in many ways, but the ability of the utility to minimize costs associated with unmanaged charging and maximize positive load shape is key to realize the greatest depth of benefits to ratepayers. This implicates active management and visibility, though utility management does not necessarily require full asset ownership.

EV drivers benefit the most from the deployment of an adequate volume of charging infrastructure that is well maintained and reasonably priced. These are implicit characteristics of infrastructure owned and managed by utilities. Critically, this infrastructure deployment allows the barrier of range anxiety to be eliminated. Auto manufacturers are focused on selling vehicles and with a few exceptions have not made meaningful investments in charging infrastructure. The existing lack of infrastructure has been a primary barrier for auto manufacturers to assess demand for electric vehicles and has slowed down investment, planning, and development in electric models. An adequate volume of charging infrastructure means that auto manufacturers can focus on non-infrastructure barriers such as model availability, dealership training, marketing, etc.

⁴ Edison Electric Institute, "Accelerating Electric Vehicle Adoption", p. 5-6. Available at: http://www.eei.org/issuesandpolicy/electrictransportation/Documents/Accelerating_EV_Adoption_final_Feb2018.pdf

Charging software and hardware providers benefit directly from utility ownership by competing for the utility's business in the procurement of charging products and services. Direct utility procurement results in a marketplace with decisions based upon features, functions, track record, and price, allowing players of different shapes and sizes to participate with a leveled playing field. As discussed later in greater detail, the adoption of open standards maximizes the initial and ongoing competition for both hardware and software products and services. Beyond direct utility procurement, other market participants benefit from improved economics associated with investing in charging infrastructure, as the utility investment accelerates EV adoption, thereby increasing utilization of non-utility infrastructure. This results in increased opportunities for all market participants, positioning utility investment – including utility ownership – as a market catalyst, rather than a market constraint.

The Role of Technology in Maximizing Benefits

In initial comments several stakeholders astutely zeroed-in on the importance of leveraging technology to maximize the benefits of transportation electrification to all ratepayers. Greenlots strongly agrees with these sentiments. Indeed, the development of rates and programs that send or represent accurate price signals to EV loads reflecting local or grid constraints and realities is essential to align the increased electrification of the transportation system with the interests of the utility system and the broader public. EV time-of-use ("TOU") rates represent a rather blunt but in some cases appropriate beginning instrument to deliver these price signals, especially at low levels of EV market penetration. Other strategies, including managed or smart charging and real-time or dynamic pricing represent more accurate instruments that can better utilize and dispatch flexible EV loads at charging stations with longer dwell times, such as residences and workplaces, to better maximize system-wide benefits and cost reductions. Other dynamic pricing instruments can also be deployed in higher power charging and shorter dwell time contexts, including DC fast charging. For these reasons, we encourage the Commission to look beyond TOU rate design and towards technology-facilitated smart/managed charging programs from the outset.

Greenlots must emphasize that the underlying key in providing these benefits and unlocking this value, in addition to technology, is a central utility role. Advanced rate design or technology driven alternatives require advanced technology and communication norms to allow consumers to respond to TOU or more dynamic price signals. Similarly, to implement managed charging, allowing utilities to actively manage the charging of EVs in response to real-time grid demands or constraints, requires appropriate software and hardware to make this both seamless for customers and the utility to implement. Managed charging programs then can provide grid services in the same way that demand response programs do, but can be more impactful as they can also increase load. This capability of both load increase and decrease is an extremely powerful tool in helping to manage and maximize the efficiency of utilization of grid assets and deliver value to all utility customers.

Technology is also key to unlocking baseline power levels and corresponding charging speeds needed for resource sizing to shift or manage EV loads, and to do so with meaningful impact. Additionally, and especially in the residential market, smart networked chargers are critical to help enable consumers to be able to respond to advanced rates and charging programs utilizing pre-defined, but potentially evolving and reconfigurable hands-off “set it and forget it” preferences. What is key to understand here is that EV-specific rates and programs governing a single load managed with technology does not require active customer involvement to respond to price signals, as the technology embedded within the charger and network software handles this actively on behalf of the customer or site host. This reality not only makes traditional arguments against advanced rate structures inapplicable, but it also makes it practical and warranted to move to advanced rates and rate alternative technology-driven programs leveraging the capabilities of the underlying technology at the outset and in an ongoing manner.

Looking not too far down the road, and recognizing the value provided by technological solutions already being deployed in EV charging hardware and software today, it is easy to see a future where the needs addressed and values historically provided by rate design are instead provided by these technological solutions in a far more effective manner. Indeed, managed charging programs are not limited to complementing rate design, but can instead go further and be a more effective alternative strategic solution for maximizing outcomes.

For these reasons, Greenlots believes that any program utilizing ratepayer or taxpayer funds should be required to utilize smart, networked EV chargers (electric vehicle supply equipment or “EVSE”) capable of unlocking these benefits. Such EVSE can and should also be used to obviate the need for separate utility metering, delivering further cost savings to program participants and general classes of ratepayers.

Regardless of the rate design tools and programs utilized, for them to be most effective in creating system-wide benefits, deep and flexible utility involvement is key, both with the EV charging hardware and software facilitating these rates and programs, and in the rate and program development.

The Imperative of Open Standards & Interoperability

This is a critical detail for the Commission to consider as it considers transportation electrification generally, and as it reviews utility filings going forward. This important consideration was discussed in several sets of opening comments. As these stakeholders illustrated, many of the chargers deployed today operate on proprietary networks and software, the implications of which become increasingly dire to ratepayers and the public as more and more infrastructure is deployed.

Proprietary networks unjustifiably risk that ratepayer or taxpayer-funded infrastructure investments can become stranded assets that don’t meet evolving needs, and that vendor lock-

in results in higher operating costs, all while stifling innovation and competition across both charging hardware and software. It is entirely within the purview and authority of the Commission to mandate open-standards based investments in allocating public funds. Utilities, policymakers, manufacturers and developers should fully embrace open standards such as Open Charge Point Protocol (OCPP) and Open ADR to avoid these outcomes and best serve EV drivers, ratepayers and the evolving market, while acknowledging that vehicle manufacturer infrastructure strategy may differ.

The adoption of open protocols and standards is essential to support transportation electrification, grow the market for EVs and EV charging products and services, enhance the driver/customer experience, integrate with the electricity system, and lower the cost of ownership of both EVs and EV charging infrastructure. The proliferation of open standards and communication methodologies provides a platform and ecosystem for innovation and customer choice that is critical to guarding against stranded assets and protecting the prudence of ratepayer investments.

As addressed in earlier answers, while open standards and communication methodologies are key elements of facilitating grid services and integration, infrastructure ownership and/or management structures are also critical contingencies for maximizing grid integration and beneficial load shape.

A Path Forward

As the diversity of stakeholders and perspectives illustrate, there is little consensus as to how best accelerate the market for electrified, advanced mobility. Adherence to an inflexible program design or view of the market and participant roles would prevent a holistic assessment of the virtues of different models and their associated costs and benefits. At the same time, simply creating or mandating different ownership structures does not mean that there will actually be competition within any given structure, or bring customer choice.

As several other stakeholders suggest, Greenlots agrees that a strong outcome of this process would be to resolve the lack of regulatory clarity that utilities and others have identified. This could be accomplished by providing guidance and a flexible framework for utilities to engage in and embrace their inherently central role in transportation electrification

We can look to other jurisdictions where guiding principles and frameworks can provide guidance for similar Commission action in Colorado. In Oregon and Washington, utilities are afforded sufficient flexibility in exploring different avenues to support and accelerate the market, including utility ownership. In California, utilities are similarly afforded flexibility to propose direct investment in and ownership of EVSE. The CPUC ensures appropriate utility involvement by imposing a “balancing test” through which perceived competitive limitations between utility and private market investments are weighed against ratepayer benefits of utility ownership of

EVSE. In all three states, utility proposed pilot programs that involve some form of direct investment in EVSE have been approved. Principles developed by the Midcontinent Transportation Electrification Collaborative offer a useful set of best practices for utility engagement in accelerating transportation electrification, emphasizing the importance of a strong utility role.⁵

In Greenlots' view, the Washington Utilities and Transportation Commission's ("UTC") "Policy and Interpretive Statement Concerning Commission Regulation of Electric Vehicle Charging Services" released in June 2017⁶ likely represents the best representative approach and set of guiding principles issued by a state regulator with respect to utility involvement in transportation electrification. The document laid out a broad framework under which utilities may propose programs:

"...it is appropriate to allow utilities to offer a range of EV charging services on a regulated basis, eligible for a standard authorized rate of return, provided that the infrastructure investments meet our traditional rate-making requirements ...we adopt a policy supporting a "portfolio approach" to electric vehicle charging services, similar to the approach used in utility conservation programs. Rather than a single "measure" or program offering, utilities should provide customers with multiple options for EV charging services, designed to serve a range of customer types, target multiple market segments, and evolve as technology changes. A program portfolio of EV charging service offerings will promote customer choice by allowing customers to choose among a portfolio of services meeting the criteria as outlined in this policy statement."⁷

The UTC Policy Statement prioritized a focus on market transformation, positing the premise that the utility role in the market may be able to diminish over time once a critical volume of vehicles are on the road. Greenlots believes market transformation to be at the heart of decision-making for encouraging utility investment and flexibility of role, including ownership. Put simply, market transformation is highly unlikely to occur within a reasonable amount of time without a significant role for the utility. Therefore, limiting utilities' ability to participate in the market translates directly to limiting the growth of the market and opportunities for all market participants.

When afforded flexibility, utilities become empowered to pilot and refine new ideas and offer a suite of options to customers, tailored to different situations and demands. This helps support utility development of an interoperable, integrated suite of smart-grid technologies that unlock value, not only on its own system, but also utilizing behind the meter assets. This customer-

⁵ Midcontinent Transportation Electrification Collaborative "Electric Utility Roles in the Electric Vehicle (EV) Market" (April 2018).

⁶ Washington State Utilities and Transportation Commission Policy and Interpretive Statement Concerning Commission Regulation of Electric Vehicle Charging Services (June 14, 2017).

⁷ I.d. at 33-34.

centric approach also is essential in securing customer buy-in and participation. When this occurs, customers are then empowered to utilize grid resources in a way that best support dynamic grid demands and constraints while accounting for their own needs – providing benefits that flow to all ratepayers.

Broader approaches exploring an array of different program designs and affording utilities sufficient flexibility will be key in realizing these significant benefits. This regulatory strategy mirrors those used successfully with utility conservation programs in many parts of this country. Amid changing technology, such flexibility affords utilities the ability to offer different options for EV charging services, tailored for different customer types and market segments, ensuring and promoting customer choice. Indeed, utility choice and optionality leads to the same for customers, which in turn provides both with the necessary tools to best support rapidly evolving grid needs and the integration of new technologies.

Conclusion

The Commission faces critical decisions regarding how utilities can best utilize their resources, expertise and abilities to help overcome market barriers. A deeper role for a utility in growing EV adoption and the deployment of infrastructure is a strong positive for the market. Drivers benefit from more charging options, OEMs and retailers experience fewer barriers to sell EVs, EV charging software and hardware sellers benefit from competition provided by utility procurement or procurement facilitation, and everyone benefits from a more robust and cohesive market over time that maximizes benefits to the grid and ratepayers.

Beyond the very clear opportunity to sell products and services through a competitive process to the utility, utility/ratepayer investment enables the market further by growing electric vehicle adoption and thereby scaling the market. It is only at a certain market scale where profitability for charging services outside of a utility program is more likely to be realized. Utility investment in EV charging infrastructure fundamentally enables electric vehicle service providers and grows the market – which results in a virtuous cycle for drivers and electric vehicle charging equipment and service providers, where more drivers improve the business case for charging such that more charging is deployed, which draws more drivers to adopt electric vehicles.

Greenlots encourages the Commission to consider the virtues of deeper, flexible utility involvement in its analysis of the utility's relationship to other market participants and the market as a whole. Adopting a modest policy or framework that affords utilities sufficient flexibility from which they can develop EV charging infrastructure plans would serve as a practical and useful first (or next) step. Going forward, the Commission could encourage or require utilities to make annual filings to support transportation electrification. These could be components of, or separate from general rate proceedings.

As echoed by other stakeholders, Greenlots encourages the Commission to afford Illinois utilities a deeper, flexible role to move with speed and scale in embracing their critical role in transportation electrification, and ensuring this transformation benefits all utility customers. Greenlots appreciates the work that the Commission has invested into this process, and the opportunity to offer these comments. We look forward to continued participation in this investigation and digging more deeply into the relevant issues to best be able to support transportation electrification and advanced mobility in Illinois.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'T. Ashley', with a stylized, cursive script.

Thomas Ashley
VP, Policy